This document contains Part 1 (pp.ES1–ES9) of the Executive Summary of the National Coastal Condition Report III.

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National Coastal Condition Report III

Executive Summary

Part 1 of 2

December 2008

EXECUTIVE SUMMARY

Courtesy of Andrew D. Stahl

Executive Summary

Coastal waters in the United States include estuaries, bays, sounds, coastal wetlands, coral reefs, intertidal zones, mangrove and kelp forests, seagrass meadows, and coastal ocean and upwelling areas (deep water rising to surface). Coastal habitats provide spawning grounds, nurseries, shelter, and food for finfish, shellfish, birds, and other wildlife. These coastal resources also provide nesting, resting, feeding, and breeding habitat for 75% of waterfowl and other migratory birds.

Section 305(b) of the Clean Water Act (CWA) requires that the U.S. Environmental Protection Agency (EPA) report periodically on the condition of the nation's coastal waters. As part of this process, coastal states provide valuable information about the condition of their coastal resources to EPA; however, because the individual states use a variety of approaches for data collection and evaluation, it has been difficult to compare this information among states or on a national basis.

To better address questions about national coastal condition, EPA, the National Oceanic and Atmospheric Administration (NOAA), the U.S. Department of the Interior (DOI), and the U.S. Department of Agriculture (USDA) agreed to participate in a multi-agency effort to assess the condition of the nation's coastal resources. The agencies chose to assess condition using nationally consistent monitoring surveys to minimize the problems created by compiling data collected using multiple approaches. The results of these assessments are compiled periodically into a *National Coastal Condition Report*. This series of reports contains one of the most comprehensive ecological assessments of the condition of our nation's coastal bays and estuaries. The assessment presented in each report is based on data from more than 2,000 sites.

The nation's coasts are a popular vacation destination, with approximately 180 million people visiting U.S. beaches each year (courtesy of Andrew D. Stahl).

The first *National Coastal Condition Report* (NCCR I), published in 2001, reported that the nation's coastal resources were in fair to poor condition. The NCCR I used available data collected from 1990 to 1996 to characterize about 70% of the nation's conterminous coastal waters. Agencies contributing these data included EPA, NOAA, the U.S. Fish and Wildlife Service (FWS), and the USDA. The second *National Coastal Condition Report* (NCCR II) was based on available data from 1997 to 2000. The NCCR II data were representative of 100% of the coastal waters of the conterminous 48 states and Puerto Rico and showed that the nation's coastal waters were slightly improved and rated in fair condition. Agencies that contributed data to the NCCR II included EPA, NOAA, FWS, and the U.S. Geological Survey (USGS). Several state, regional, and local organizations also provided information on the condition of the nation's coasts.

This third *National Coastal Condition Report* (NCCR III) assesses the condition of the nation's estuaries and coastal embayments (collectively referred to as "coastal waters" in this report), including the coastal waters of Hawaii and Southcentral Alaska, based primarily on EPA's National Coastal Assessment (NCA) data collected primarily in 2001 and 2002. The NCA; NOAA's National Marine Fisheries Service (NMFS) and National Ocean Service; FWS's National Wetlands Inventory (NWI); and USGS contributed most of the information presented in this report. As shown in this report, the overall condition score (2.8) for the nation's coastal waters has improved since 1990, but continues to be rated fair. This report also presents analysis of temporal changes in coastal condition from 1990 to 2002 for the nation and by region.

With each *National Coastal Condition Report*, the collaborating agencies strive to provide a more comprehensive picture of the nation's coastal resources and to communicate these findings to the informed public, coastal managers, scientists, members of Congress, and other elected officials. The NCCR III builds on the foundation provided by the NCCR I and NCCR II, and efforts are underway to assess even more areas using comparable and consistent analysis methods. In addition to the areas previously assessed in the NCCR II, this report provides condition data for Hawaii and Southcentral Alaska. It should be noted that the Great Lakes data provided in this report are not directly comparable with the data provided for other regions; however, general comparisons of the Great Lakes condition ratings are provided. Although a freshwater ecosystem, the Great Lakes are included as a coastal resource because Congress has stipulated that the Great Lakes be considered in coastal legislation. Ongoing monitoring efforts in Alaska, Hawaii, and the island commonwealths and territories will support comprehensive assessments of coastal condition in future installments of the *National Coastal Condition Report* series.

The NCCR III includes an assessment of Hawaii's estuaries and coastal embayments (courtesy of ErgoSum88).

The NCCR III presents three main types of data: (1) coastal monitoring data, (2) offshore fisheries data, and (3) assessment and advisory data. The ratings of coastal condition in this report are based primarily on coastal monitoring data because these are the most comprehensive and nationally consistent data available related to coastal condition. One source of coastal monitoring data is EPA's NCA, which provides information on the condition of coastal waters for all regions of the United States. The NCCR III uses NCA

and other data to evaluate five indices of coastal condition—water quality index, sediment quality index, benthic index, coastal habitat index, and fish tissue contaminants index—in each region of the United States (Northeast Coast, Southeast Coast, Gulf Coast, West Coast, Great Lakes, Southcentral Alaska, Hawaii, and Puerto Rico). The resulting ratings for each index are then used to calculate the overall condition ratings for the regions, as well as index and overall condition ratings for the nation. The NCCR III assessment applies to 30 coastal states (22 ocean states, 6 Great Lakes states, and 2 ocean/Great Lakes states) and Puerto Rico (Figure ES-1). Trends in the NCA data are discussed at the end of this Executive Summary.

In addition to rating coastal condition based on coastal monitoring data, the NCCR III summarizes available information related to offshore fisheries, fish consumption advisories, and beach advisories and closures. Although not directly comparable, this information, together with descriptions of individual monitoring programs, paints a picture of the overall condition of the nation's coastal resources.

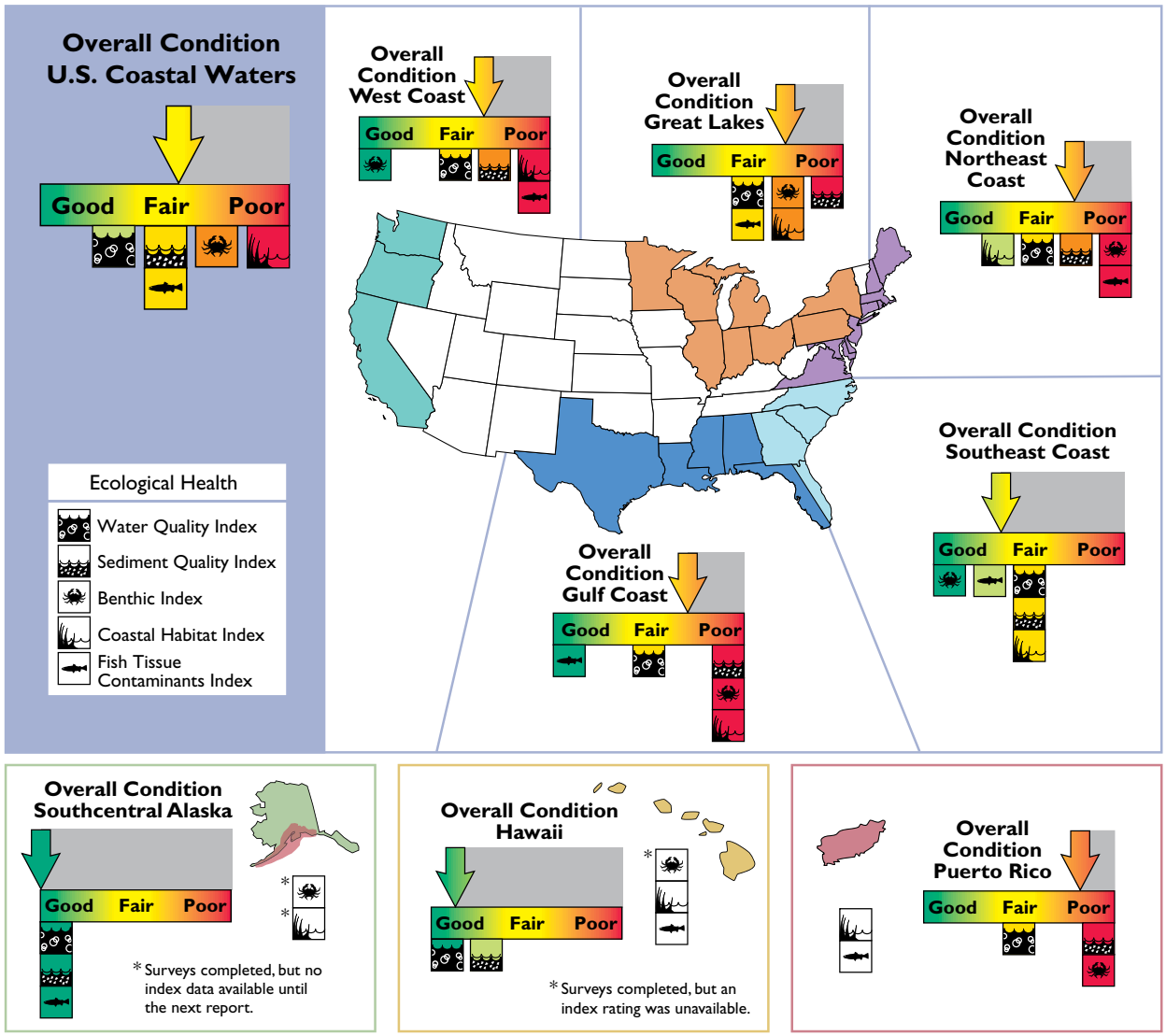


Figure ES-1. Overall national and regional coastal condition based on data collected primarily between 2001 and 2002 (U.S. EPA/NCA).

Summary of the Findings

This report is based on the large amount of monitoring data collected primarily between 2001 and 2002 on the condition of the coastal and Great Lakes resources of the United States. Ecological assessment of these data shows that the nation's coastal waters are rated fair for overall condition. With respect to the coastal waters of the geographic regions assessed in this report, the Puerto Rico region is rated poor; the Northeast Coast, Gulf Coast, and Great Lakes regions are rated fair to poor; the Southeast Coast and West Coast regions are rated fair; and the Southcentral Alaska and Hawaii regions are rated good. No overall condition assessments were available for Guam, American Samoa, the Northern Mariana Islands, or the U.S. Virgin Islands.

The major findings of the 2001–2002 study period are as follows:

- The overall condition of the nation's coastal waters is rated fair (overall condition score of 2.8) and has improved only slightly since the initial NCCR I in 2001. This rating is based on the five indices of ecological condition assessed in this report: water quality index, sediment quality index, benthic index, coastal habitat index, and fish tissue contaminants index (Tables ES-1 and ES-2). This report also assesses component indicators for the water quality index (dissolved inorganic nitrogen [DIN], dissolved inorganic phosphorus [DIP], chlorophyll *a*, water clarity, and dissolved oxygen) and the sediment quality index (sediment toxicity, sediment contaminants, and sediment total organic carbon [TOC]).
- The water quality index score for the nation has improved substantially, and smaller improvements in the sediment quality and benthic index scores were noted. The fish tissue contaminants and coastal habitat index scores have shown little or no improvement.
- The water quality index for the nation's coastal waters is rated good to fair, with 57% of the nation's coastal area rated good for water quality condition, 34% rated fair, and 6% rated poor.
- Eighteen percent of the NCA stations where fish were caught were rated poor for the fish tissue contaminants index, based on the EPA Advisory Guidance values used to assess the fish tissue contaminants index for this report.
- The coastal habitat, sediment quality, and benthic indices show the poorest conditions throughout the coastal United States, whereas the dissolved oxygen and DIN indicators are most often rated in good condition throughout the nation.

Table ES-1. Rating Scores[a] by Index and Region

Index	Northeast Coast	Southeast Coast	Gulf Coast	West Coast	Great Lakes	Southcentral Alaska	Hawaii	Puerto Rico	United States[b]
Water Quality Index	3	3	3[c]	3	3	5	5	3	3.9
Sediment Quality Index	2	3	1	2	1	5	4	1	2.8
Coastal Habitat Index	4	3	1	1	2	—[d]	—[d]	—[d]	1.7
Benthic Index	1	5	1	5	2	—[d]	—[d]	1	2.1
Fish Tissue Contaminants Index	1	4	5	1	3	5	—[d]	—[d]	3.4
Overall Condition	2.2	3.6	2.2	2.4	2.2	5.0	4.5	1.7	2.8

[a] Rating scores are based on a 5-point system, where a score of less than 2.0 is rated poor; 2.0 to less than 2.3 is rated fair to poor; 2.3 to 3.7 is rated fair; greater than 3.7 to 4.0 is rated good to fair; and greater than 4.0 is rated good.
[b] The U.S. score is based on an areally weighted mean of regional scores and includes the scores for Southcentral Alaska and Hawaii.
[c] This rating score does not include the impact of the hypoxic zone in offshore Gulf Coast waters.
[d] This index was not assessed for this region.

Describing Coastal Condition

Three types of data are presented in this report:

- **Coastal Monitoring Data**—Coastal monitoring data are obtained from programs such as EPA's Environmental Monitoring and Assessment Program (EMAP) and NCA, NOAA's National Status & Trends (NS&T) Program, and FWS's NWI, as well as Great Lakes information from the State of the Lakes Ecosystem Conference (SOLEC). These data are used to rate indices and component indicators of coastal condition for the geographic regions assessed in this report and for the nation. These index scores are then used to calculate overall condition scores and ratings for the regions and the nation. The rating criteria for each index and component indicator in each region are determined based on existing criteria, guidelines, interviews with EPA decision makers and other resource experts, and/or the interpretation of scientific literature.
- **Offshore Fisheries Data**—These data are obtained from programs such as NOAA's Marine Monitoring and Assessment Program and Southeast Area Monitoring and Assessment Program. These data are used in this report to assess the condition of coastal fisheries in large marine ecosystems (LMEs).
- **Assessment and Advisory Data**—These data are provided by states or other regulatory agencies and compiled in nationally maintained databases. These data provide information about designated-use support, which affects public perception of coastal condition as it relates to public health. The agencies contributing these data use different methodologies and criteria for assessment; therefore, the data cannot be used to make broad-based comparisons among the different coastal areas.

Table ES-2. Percent Area in Poor Condition[a] by Index (except Coastal Habitat Index) and Region

Index	Northeast Coast	Southeast Coast	Gulf Coast	West Coast	Great Lakes	Southcentral Alaska	Hawaii	Puerto Rico	United States
Water Quality Index[b]	13	6	14[c]	3	—	0	4	9	6
Sediment Quality Index[d]	13	12	18	14	—	1	5	61	8
Coastal Habitat Index[e]	—	—	—	—	—	—	—	—	—
Benthic Index	27	7	45	5	—	—	—	35	27
Fish Tissue Contaminants Index[f]	31	10	8	26	—	0	—	—	18

[a] The percent area of poor condition is the percentage of total surface area of estuaries and coastal embayments in the region or the nation (proportional area information not available for the Great Lakes or the coastal habitat index).
[b] The water quality index is based on measurements of five component indicators: DIN, DIP, chlorophyll *a*, water clarity, and dissolved oxygen.
[c] The area of poor condition does not include the hypoxic zone in offshore Gulf Coast waters.
[d] The sediment quality index is based on measurements of three component indicators: sediment toxicity, sediment contaminants, and sediment TOC.
[e] The fish tissue contaminants index is presented as the percentage of fish samples analyzed (Northeast Coast region) or monitoring stations where fish were caught (all other regions) and is based on analyses of whole-fish samples (not fillets).

Coastal Monitoring Data

The overall condition of the nation's coastal waters is rated fair (Figure ES-2), based on ratings for the five indices of coastal condition assessed for this report: water quality index, sediment quality index, benthic index, coastal habitat index, and fish tissue contaminants index. The national indices were assigned a good, fair, or poor rating based on a weighted average of the index scores for each coastal region of the United States. An average of the national index scores was used to determine an overall condition score and rating for the nation. Supplemental information on the water and sediment quality component indicators (e.g., DIN, DIP, chlorophyll *a*, water clarity, dissolved oxygen, sediment toxicity, sediment contaminants, and sediment TOC), when available, is also presented throughout this report.

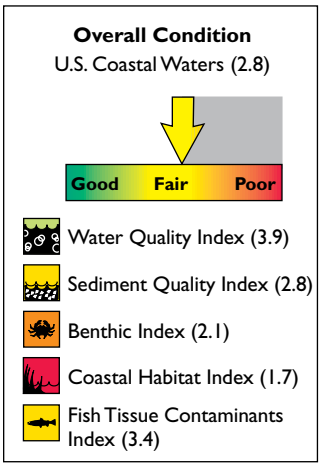
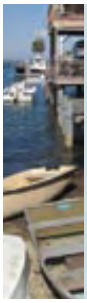


Figure ES-2. The overall condition of U.S. coastal waters is rated fair (U.S. EPA/NCA).

A summary of each index is presented below.

- **Water Quality Index**—The water quality index for the nation's coastal waters is rated good to fair. The percent of coastal area rated poor for water quality ranged from 0 in Southcentral Alaska to 14% in the Gulf Coast region. Most water quality problems in U.S. coastal waters are associated with degraded water clarity or increased concentrations of DIP or chlorophyll *a*. Low dissolved oxygen concentrations occur in only 4% of the U.S. coastal area.
- **Sediment Quality Index**—The sediment quality index for the nation's coastal waters is rated fair. The sediment quality index is rated poor for the Gulf Coast, Great Lakes, and Puerto Rico regions; fair to poor for the West Coast and Northeast Coast regions; fair for the Southeast Coast region; good to fair for Hawaii; and good for Southcentral Alaska. Many areas of the United States have significant sediment degradation, including elevated concentrations of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, and metals. Most of these sediments with elevated contaminant concentrations occur in the coastal waters of the Northeast Coast region and Puerto Rico. Sediment toxicity was observed most frequently in the coastal waters of the Gulf Coast and West Coast regions. High concentrations of sediment TOC (often associated with the deposition of human, animal, and plant wastes) were observed in 44% of Puerto Rico's coastal waters.
- **Benthic Index**—The benthic index for the nation's coastal waters is rated fair to poor. Poor benthic condition is observed in Gulf Coast, Northeast Coast, and Puerto Rico coastal waters, largely due to degraded sediment quality; however, in some cases, poor benthic condition is associated with poor water quality conditions, such as low dissolved oxygen and elevated nutrient concentrations. Both the Southeast Coast and West Coast regions are rated good for benthic condition. Benthic index data were unavailable for Southcentral Alaska or Hawaii.



The NCA monitoring data used in this assessment were based on single-day measurements collected at sites throughout the United States during a 9- to 12-week period in late summer. Data were not collected during other time periods.

- **Coastal Habitat Index**—The coastal habitat index for the nation's coastal waters is rated poor. Coastal wetland losses from 1780 to 2000 were greater than or equal to 1% per decade in each region. The index is rated poor for the coastal wetland areas of the West Coast and Gulf of Mexico. It should be noted that the coastal habitat scores and ratings for the NCCR III are identical to those presented in the NCCR II due to a lack of available new data.
- **Fish Tissue Contaminants Index**—The fish tissue contaminants index for the nation's coastal waters is rated fair, with 18% of the stations where fish were caught rated poor for this index. The fish tissue contaminants index is rated good for the Gulf Coast and Southcentral Alaska regions, good to fair for the Southeast Coast region, fair for the Great Lakes region, and poor for the Northeast Coast and West Coast regions. Fish tissue contaminants data were unavailable for the coastal waters of Hawaii, Puerto Rico, Florida, and Louisiana.

Offshore Fisheries Data

The NMFS fisheries data were categorized by LME. LMEs are areas of ocean characterized by distinct bathymetry, hydrography, productivity, and trophic relationships. LMEs extend from river basins and estuaries to the seaward boundaries of continental shelves and the outer margins of major current systems. Within these waters, ocean pollution, fishery overexploitation, and coastal habitat alteration are most likely to occur. Sixty-four LMEs surround the continents and most large islands and island chains worldwide and produce 95% of the world's annual marine fishery yields; 10 of these LMEs are found in waters adjacent to the conterminous United States, Alaska, Hawaii, Puerto Rico, and U.S. island territories (Figure ES-3). Organizing the NMFS fisheries data by LME allows readers to more easily consider fishery and coastal condition data together. These data are more comparable using LMEs for several reasons. Geographically, LMEs contain both the coastal waters assessed by NCA and the U.S. Exclusive Economic Zone (EEZ)

Figure ES-3. U.S. states and island territories are bordered by 10 LMEs (NOAA, 2007g).

waters containing the fisheries assessed by NMFS. In addition, the borders of the LMEs coincide roughly with the borders of the NCA regions.

This report presents offshore fisheries data by LME through 2004. The index period was limited to 2004 because this timeframe is more consistent with the coastal condition and advisory data presented in this report. This temporal consistency allows the reader to consider all three types of data together to get a clearer "snapshot" of conditions in U.S. coastal waters.

In 2004, NOAA's Office of Sustainable Fisheries reported on the status of 688 marine fish and shellfish stocks with respect to their overfished and overfishing condition. According to the Magnuson-Stevens Fishery Conservation and Management Act of 1996, a fishery is considered overfished if the stock size is below a minimum threshold, and overfishing is occurring if a stock's fishing mortality rate (rate of deaths due to fishing) is above a maximum level. These thresholds and levels are associated with maximum sustainable yield-based reference points and vary between individual stocks, stock complexes, and species of fish. Of the 200 fish stocks whose status with respect to overfished condition is known, 144 (72%) were not overfished and 56 (28%) stocks or stock complexes were overfished. The overfishing status of 236 stocks is known, of which 44 (19%) stocks or stock complexes have a fishing mortality rate that exceeds the overfishing threshold. The NMFS has approved rebuilding plans for the majority of overfished stocks. Five fishery management plan (FMP) amendments were approved in 2004 to implement final rebuilding plans for 23 stocks in the Northeast U.S. Continental Shelf, Southeast U.S. Continental Shelf, Gulf of Alaska, and East Bering Sea LMEs.

The number of stocks considered to be overfished has decreased from 92 in 2000 and 81 in 2001 to 56 in 2004. Some of the stocks whose status has changed are located in the Gulf of Alaska, California Current, Northeast U.S. Continental Shelf, and Gulf of Mexico LMEs. The Pacific whiting (a demersal or bottom-dwelling fish) stock of the Gulf of Alaska and California Current LMEs has been fully rebuilt, and overfishing is no longer occurring. Northeast U.S. Continental Shelf LME black sea bass stock is also no longer overfished. Three more stocks—lingcod, Pacific ocean perch (Gulf of Alaska and California Current LMEs), and king mackerel (Gulf of Mexico LME)—have increased in abundance to the point that they also are no longer overfished. Rebuilding measures for all these stocks will continue until each stock has been fully rebuilt to a level that provides the maximum sustainable yield.

Assessment and Advisory Data

States report water quality assessment information and water quality impairments under Section 305(b) of the CWA. States and tribes rate water quality by comparing measured values to their state and tribal water quality standards. The 305(b) assessment ratings (submitted by the states in 2002) are stored in EPA's National Assessment Database (NAD). These data are useful for evaluating the success of state water quality improvement efforts; however, it should be emphasized that each state monitors water quality parameters differently, so it is difficult to make generalized statements about the condition of the nation's coasts based on these data alone. Because the reporting of 2002 305(b) information was not complete for all coastal states and territories, it was decided that this information would not be summarized for inclusion in the NCCR III. In addition, 305(b) data are reported on a 2-year cycle, and there are no results for 2003. Therefore, only data from the EPA's National Listing of Fish Advisories (NLFA) database and the Beaches Environmental Assessment, Closure, and Health Program (BEACH) PRogram tracking, Beach Advisories, Water quality standards, and Nutrients (PRAWN) database are presented for calendar year 2003 in this report.

Flower Garden Banks is a National Marine Sanctuary (NMS) located in the Gulf of Mexico LME (courtesy of NOAA and the University of North Carolina at Wilmington).